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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

ABOAGYE, MICHAEL

ART UNIT

PAPER NUMBER

1793

MAIL DATE

DELIVERY MODE

05/01/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/849,525	Applicant(s) EHRSTROM ET AL.	
	Examiner MICHAEL ABOAGYE	Art Unit 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 February 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) 15-18 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 and 19 is/are rejected.
- 7) ☒ Claim(s) 5 and 6 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. Claims 5 and 6 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. It is noted that the independent claim 1 defines the treatment time to be at least 72 hour; hence any claim depending on claim 1, reciting duration time lesser, such as (24h. or 48 h.) is inconsistent or improper with respect to the base claim.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-14 and 19 are rejected U.S.C. 103(a) as being unpatentable over Waldron et al. (US Patent No. 6,168,067) in view of Sainfort et al. (US Patent No. 5,560,789).

Waldron et al. teaches a friction stir method of a first and a second structural members made of aluminum alloy comprising: conducting pre- solution heat treatment before friction stir welding the structural members; wherein said treatment is conducted

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at a time long enough to allow the β phase to dissolve (Waldron et al. column 4, lines 17-48); friction stir welding the structural members and thereafter conducting post weld heat treatment and quenching the welded structural members (Waldron et al. abstract, column 3, lines 36-67 and column 6, lines 12-45). Waldron et al. also teaches aluminum alloy containing copper and manganese (Waldron et al. column 3, line 60- column 4, line 5). Waldron et al. teaches heat treatment after rolling, extrusion or forging (the examiners interpretation is based on the fact that the work pieces utilized in Waldron et al. process constitute a structural member preform, meaning already processed from the billet). Waldron et al. further teaches flushing an inert gas over the surface of a welding zone, during welding (Waldron et al., column 5, lines 37-54)

Waldron et al. does not teach a heat treatment with duration twice as long as the normal homogenization or solution heat treatment duration, as claimed.

Sainfort et al. teaches a heat treating aluminum alloy for obtaining high mechanical strength comprising: conducting homogenizing and solution heat treatment at a temperature range of less than 10 degrees Celsius or preferably less than 5 degrees Celsius from the melting point of said alloy to avoid incipient melting of the alloy (column 2, lines 24-42), (note, both temperatures are not more than 20 degrees Celsius, hence the claimed limitation is met); wherein said heat treatment is allowed to run for a period of 48 hours (note, this heat treatment duration is the same as what the applicant claims as 2t, reference to applicant's specification paragraph [0016]), and at a temperature of 475 degrees Celsius (less than 500 degrees, hence the claimed limitation is met). Sainfort et al. teaches heat treatment leading to specific melting peak

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energy of less than 2 J/g (see, Sainfort et al., column 1, lines 52-63) , (note less than 2 J/g, could also imply less than 0.5J/g or less 1J/g, hence the claimed limitations are met). Sainfort et al. teaches heat treatment before rolling, extrusion or forging (column 2, lines 35-50). Sainfort et al. also teaches aluminum alloy of the 7000 series containing copper (abstract); said alloy also contains chromium at a weight of less than about 0.15%, and a zirconium at a weight of less than about 0.09% (Sainfort et al., abstract), furthermore, an aluminum alloy having manganese content by weight at 0-0.5 % (Sainfort et al., abstract, and column 1, lines 53-63). Sainfort et al. also teaches heat treatment duration of at least 72 h. (See, Sainfort et al., column 3, and lines 10-16).

It would have been obvious to one of ordinary skill in the art at the time the applicant's invention was made to modify the process of Waldron et al. to use a solution heat treatment time twice that of conventional and at a temperature very close to the melting temperature, but avoiding incipient melting of the aluminum alloy as taught by Sainfort et al. to enable complete dissolution of soluble phases and ultimately enhancing the mechanical strength of the material (Sainfort et al, abstract, column 2, lines 24-50).

Response to Arguments

4. The examiner acknowledges the applicants' amendment received by USPTO on February 13, 2008. Claims 15-18 have been withdrawn, and claims 1-14 and 19 remain under consideration in the application.

5. Applicant's arguments filed February 13, 2008 have been fully considered but they are not persuasive. Applicant argues that Sainfort et al. do not provide any disclosure of friction stir welding or welding of any type. The disclosure of Sainfort et al. is limited to improving strength with a prolonged homogenization treatment, and does not teach or suggest a heat treatment before friction stir welding in order to improve the weld properties after friction stir welding and solution heat treatment, as recited in the claimed invention. Therefore the combined disclosures of Waldron et al. and Sainfort et al. do not teach or suggest the claimed invention, and there is no motivation to combine the references as suggested by the Examiner to arrive at the claimed invention. The examiner agrees that Sainfort et al. do not teach welding. However Sainfort et al. teaches subjecting said heat treated aluminum alloy through certain forming processes which requires good mechanical behavior in the same manner as required in the applicant's welding process (See, Sainfort et al., column 2, and lines 43-46). The examiner believes that Waldron et al. covers the claimed welding steps and that what is deficient in Waldron et al. disclosure is the claimed process step drawn to enhancing good mechanical behavior of the alloy. The patent to Sainfort et al. is therefore combined with Waldron et al. with the sole purpose of remedying such deficiency. One cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Applicant further argues that Sainfort et al. does not teach that treatment duration of more than 48 hours would provide any benefit at all. The examiner disagrees,

because in column 2, lines 5-25, Sainfort et al. provides some form of data on the mechanical properties of the alloys according to the invention. It is also noted the applicant's evidence showing improvement in the mechanical behavior of the alloys according to the invention is in similar format (i.e. numbers indicating grain size. Though micrographs indicating said homogenized grain sizes were mentioned in the specification paragraph [033], however no illustrative evidence was provided).

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL ABOAGYE whose telephone number is (571)272-8165. The examiner can normally be reached on Mon - Fri 8:30am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Michael Aboagye/
Assistant Examiner,
Art Unit 1793

/Kevin P. Kerns/

Primary Examiner, Art Unit 1793